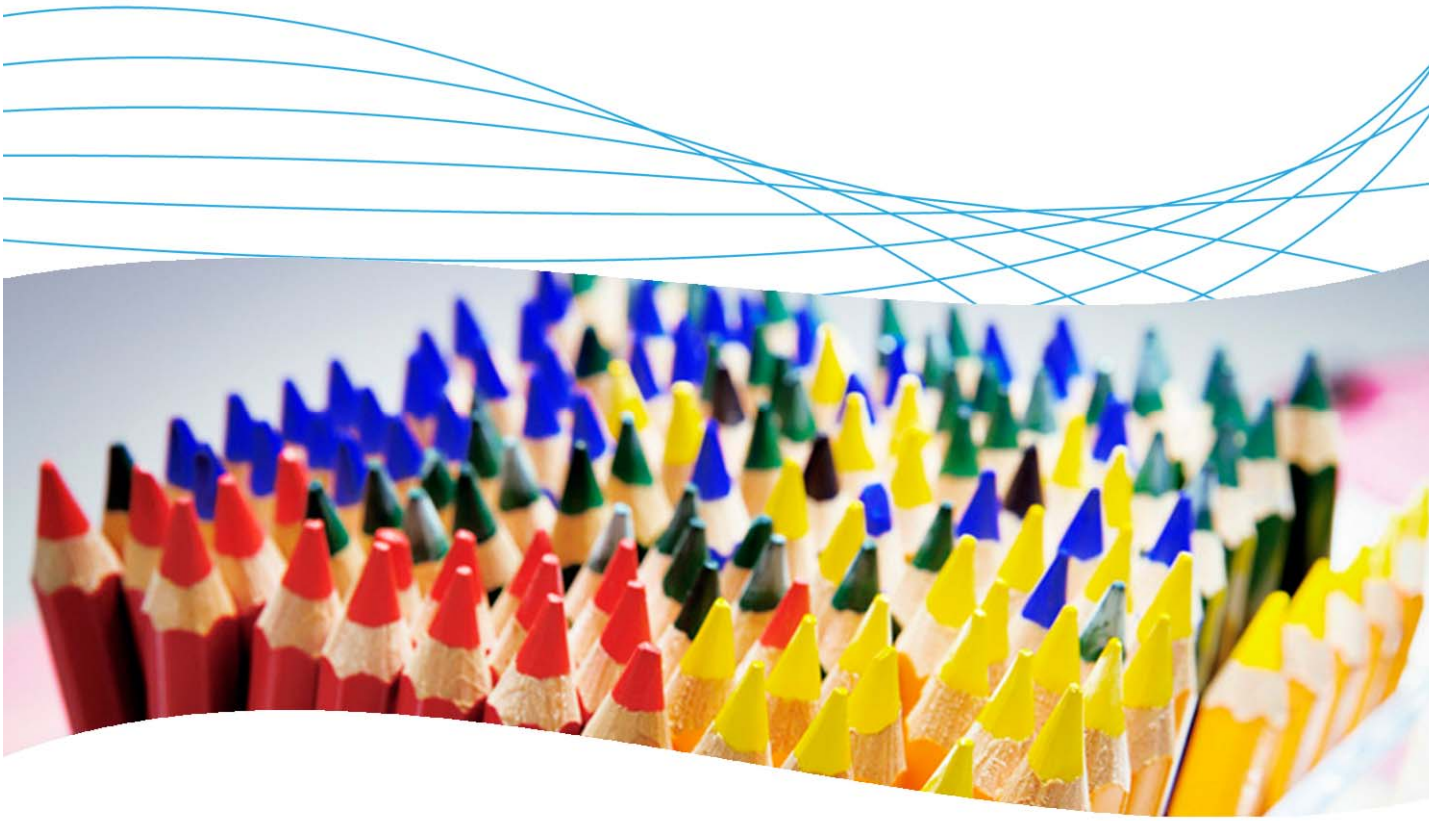
An HP ProCurve Networking Application Note

Interoperability between ProCurve WESM zl and Alcatel-Lucent IP Touch Wireless LAN phones



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1. Introduction

This document describes the interoperability of a ProCurve wireless services solution coupled with the Alcatel-Lucent IP Touch Wireless LAN Phone 310 or 610 to provide a secure Voice over WLAN (VoWLAN) solution with the following services:

- Secure wireless encryption with WPA/WPA2 (pre-shared key)
- Fast roaming
- Quality of Service on the wireless media, with SpectraLink Voice Protocol (SVP)

Note: Alcatel-Lucent IP Touch Wireless LAN 310 and 610 phones are virtually the same models as Avaya 3641 and 3645 wireless phones and SpectraLink-Polycom 8020 and 8030 models, and have similar features.

2. Prerequisites

You will need the following equipment:

- ProCurve Switch 5406zl or 8212zl with the latest firmware version
- Wireless Edge Services Module zl (WESM zl) plugged into a slot of the 5406zl
- Two ProCurve radio ports (RP210 or RP230)
- A management server configured as a domain controller, with a RADIUS server installed (IAS in this application note) and ProCurve Manager Plus (optional)
- One Alcatel-Lucent IP Touch Wireless LAN Phone 310 or 610

The wireless services module and radio ports are installed in the 5406zl or 8212zl. The radio ports have been discovered.

For more information on this configuration please refer to ProCurve Application Note AN-M1, *How to extend your wired network to wireless*.

3. Network architecture

Figure 1 details the configuration referenced in this application note.

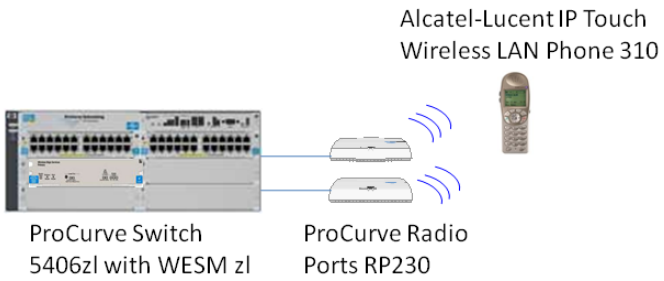


Figure 1. Configuration for ProCurve interoperability with Alcatel-Lucent wireless IP phones

4. Secure wireless WPA2-PSK encryption

Alcatel-Lucent Wireless LAN 310 and 610 phones support the following encryption options:

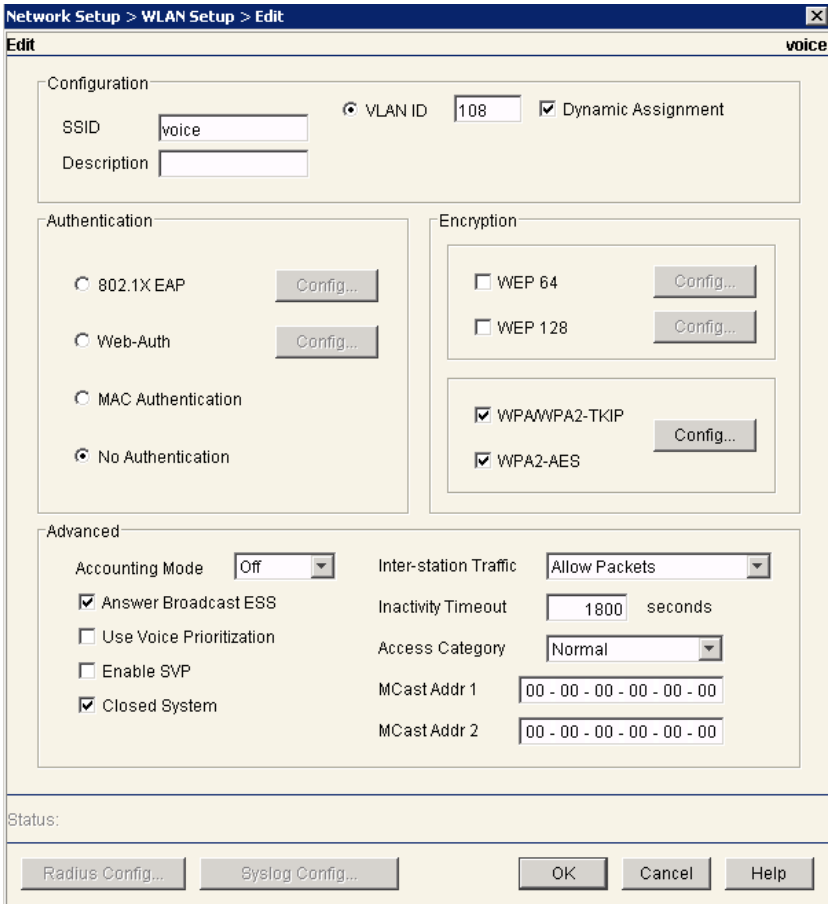
- WEP
- WPA-PSK
- WPA2-PSK
- Cisco FSR

This section describes how to configure WPA2-PSK authentication.

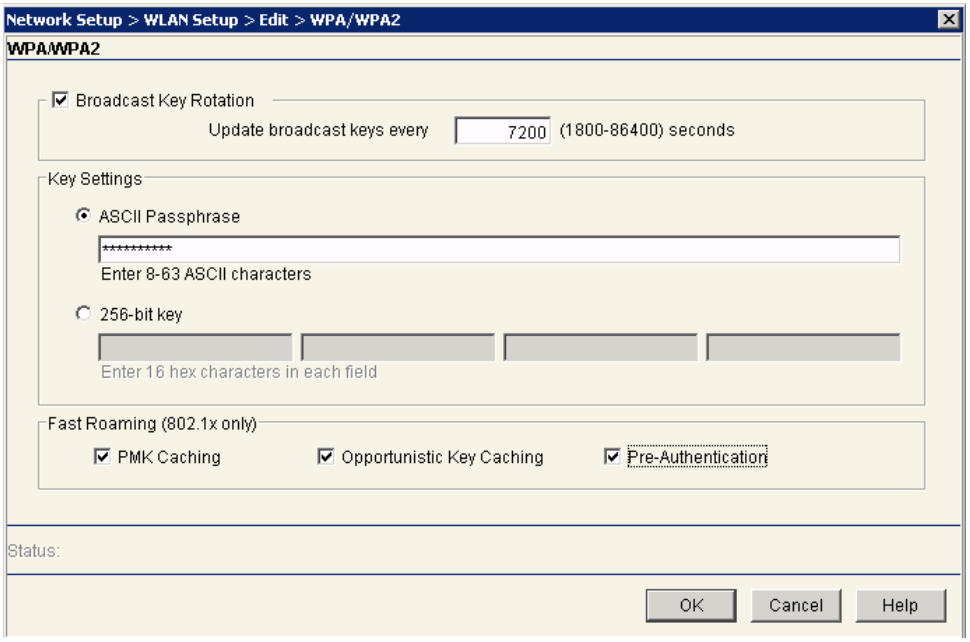
4.1 Configure encryption on the WESM

To configure the ProCurve WESM for secure wireless encryption via WPA2-PSK:

1. On the wireless edge services module, go to Network Setup > WLAN Setup and create a new WLAN called voice.
2. Configure this WLAN as follows:
   - SSID: voice
   - VLAN ID: The VLAN you want to be assigned to the phone. This VLAN must be tagged on the WESM uplink from the switch menu. (For details, refer to Application Note AN-M1, or to the *Wireless Services Module Administrator Guide*).
   - Authentication: No Authentication.
   - Encryption: Enable both WPA/WPA2 TKIP and WPA2 AES.



3. Click the Config button, and configure the pre-shared key as follows.
    - ASCII passphrase: procurve
    - Enable all three Fast Roaming options (PMK caching, Opportunistic key caching, Pre-authentication).



4. Click OK to return to the main Edit window.
5. In the main Edit window, under Advanced, select Closed System, then click OK.
6. Finally, to enable the new WLAN, at the bottom of the WLAN list window click the Enable button.

4.2 Configure the Alcatel-Lucent phone for encryption

To open the administration menu on an Alcatel-Lucent wireless telephone:

1. Access the phone administration menu: With the handset powered off, press and hold the START (green) key. While holding the START key, press and release the END (red) key. When the Admin menu appears, release the START (green) key.
2. If prompted, enter the admin password. Default password is 123456.
3. Once in the Admin menu, use the navigation keys just below the softkeys to navigate and select desired options. Enter numbers by pressing the buttons on the keypad.

4.2.1 Configure the phone:

- Language: Choose your language.
- Telephony protocol: Leave set to the default.
- Password enable/disable: Enable or disable the admin password.

4.2.2 Configure the network:

For network configuration:

- IP addresses: You have the choice between DHCP and Static:
    - Use DHCP (default): If you select Use DHCP, the DHCP scope in the DHCP server must be configured with the following options:

Option Code	Description
1	Subnet mask
3	Default gateway
6	DNS server
15	Domain name
66	TFTP server
151	SVP server
152	OAI gateway

    - Static IP: If you use a static IP address, configure the following parameters. Enter IP addresses and masks as a single number, with no periods in between:
        - Phone IP
        - Default Gateway
        - Subnet Mask
        - TFTP Server IP: Address of the server that will be used for firmware updates
        - Syslog Server IP
        - Time Server IP
        - SVP IP address
        - Alcatel TFTP Info
        - OAI Server IP

- SSID: voice
- Security: WPA-PSK
- Passphrase: procurve
- Reg Domain: Regulatory domain. This should be:
    - 01 for North America
    - 02 for Europe

  Note: From the Network Config menu itself, you can view the Reg Domain but not modify it. To modify the Reg Domain, while in the Network Config menu click on the bottom right phone button (the loudspeaker key, the one with the volume icon).
- Once the regulatory domain is set, choose the 802.11 mode:
    - a
    - b and b/g mixed
    - g only

On the WESM, you can now see the phone in Device Association > Wireless stations. You can view the MAC address, IP address, WLAN, VLAN, and Radio Index.

On the phone you can view similar information in System > Network > Info.

5. Fast roaming

Layer 2 roaming occurs when a phone that was associated to a radio port moves to another radio port adopted by the same WESM. The phone remains in the same VLAN.

Layer 3 roaming happens when a phone moves between two radio ports associated to different WESM modules. The voice WLAN is associated with different VLANs (and subnets) on the two modules. In this case, the phone keeps its originating IP address but the voice flow is tunneled by the current module to the home module.

For more information on L2/L3 roaming configurations, please refer to ProCurve Application Note AN-M3, *How to configure L2 and L3 wireless roaming*.

5.1 Fast roaming options

Normally, to enable a phone to transition faster between two radio ports and reduce the roaming time, you can configure these options:

- PMK caching
- Opportunistic key caching
- Pre-authentication

But these options apply to 802.1X authentication only, which is not supported by the Alcatel-Lucent wireless phone. For this reason, the WESM is configured with WPA2-PSK (WP2 with a pre-shared key) authentication.

5.2 Configure self-healing

The self-healing feature enables associating neighbors to each radio port. In case of failure of a radio port, the neighbors increase their transmit power to provide coverage and compensate for the failed RP. You can also enable interference avoidance, which causes radios to change their channel settings to avoid interfering with surrounding radios.

To enable self-healing:

1. From the Special Features > Self Healing > Configuration tab, check the Enable Neighbor Recovery box, then click Apply.

2. Then from the Neighbor Details tab click Detect Neighbors.
3. You can now edit an RP radio to check that the other radios with same 802.11 mode (a or b/g) have been listed as neighbors.

Radio Index	Description	Type	RP Ethernet MAC	Action	Neighbor Radio Indices
1	RADIO1	802.11bg	00-14-C2-A0-6B-D0	Both	2,4
2	RADIO2	802.11bg	00-17-A4-9B-6F-0B	Both	1,4
3	RADIO3	802.11a	00-17-A4-9B-6F-0B	Both	6
4	RADIO4	802.11bg	00-17-A4-9D-6F-57	Both	1,2
5	RADIO5	802.11a	00-17-A4-9B-6F-57	Both	None
6	RADIO6	802.11a	00-14-C2-A0-6B-D0	Both	3

5.3 Test roaming time

You can determine the roaming time by first using the WESM to determine the radio port to which the phone is associated. To test roaming time:

1. From Device Association > Wireless Stations, note the radio's Station Index.
2. Go to Device Association > Radio Adoption Statistics and determine the MAC address of the corresponding radio port.
3. To determine the switch port associated with this MAC address, use ProCurve Manager's Find Node tool.
    - Use the command show lldp info remote all on the switch if the radio ports are connected at layer 2.
    - Or use show arp if the radio ports have IP addresses.
4. From a machine on the network launch a ping to the phone IP address.
5. From the switch CLI or Web agent disable the port of the RP to which the phone is associated. The phone should lose one or two pings, then subsequent pings should be successful again as the phone connects to the other RP.
6. You can initiate a phone call to another phone on the network and then disable the radio port. The communication link should remain on, and the voice should be lost for less than one second.

6. SVP and voice prioritization

Voice prioritization enables the radio ports to monitor all packets in a WLAN. If the IP header indicates a voice packet, the WESM marks the packet as high priority.

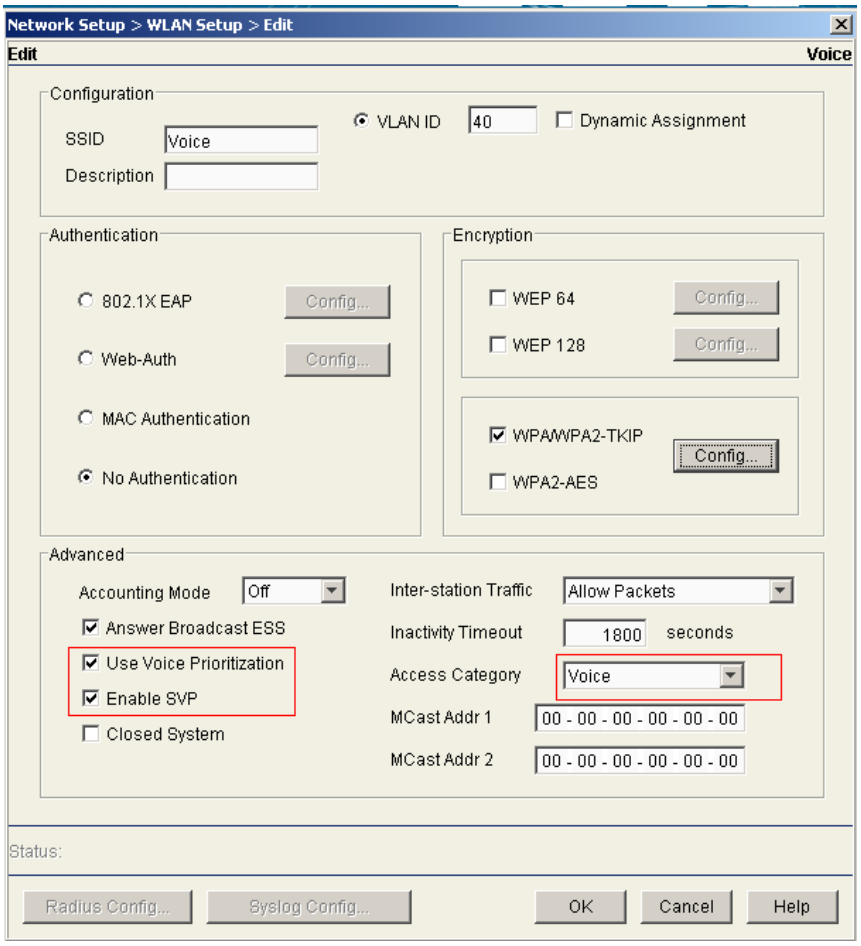
SpectraLink Voice Prioritization (SVP) is an IEEE 802.11-compliant QoS mechanism developed by SpectraLink. It is implemented in wireless phones, APs/RPs, and SpectraLink servers. SVP minimizes latency for voice traffic by establishing priority queues for voice packets, and enables voice packets to be transmitted in a coordinated fashion without any back-off interval, reducing delays.

6.1 Enable voice prioritization

To enable SVP and Voice Prioritization on the voice WLAN:

1. In the Network Setup > WLAN Setup > Edit window, go to the Advanced panel and put check marks in the boxes to enable these settings:
    - Use Voice Prioritization
    - Enable SVP

2. Set the Access Category to Voice.



3. On the wired network, configure the VLAN of the voice WLAN as voice.

6.2 Configure WMM

Another possibility for prioritizing voice traffic is to configure WiFi Multimedia (WMM). WMM automatically defines four classes of traffic that will be queued and prioritized accordingly. However, SpectraLink does not recommend enabling WMM simultaneously with SVP.

For more information on WMM configuration on the WESM, please refer to ProCurve Application Note AN-M12, *Using 802.11e and WMM on the ProCurve Wireless Edge Services Module*.

7. Firmware versions and upgrades

This section provides the firmware versions used to create the examples in this application note, and explains how to upgrade firmware in the Alcatel-Lucent Wireless LAN phone.

7.1 ProCurve switch firmware

Firmware versions of the ProCurve switches used for this application note are as follows:

- K.13.09 for ProCurve switch 5406zl
- WT.01.15 for ProCurve WESM zl

7.2 Firmware for the Alcatel-Lucent wireless phone

Alcatel-Lucent IP Touch Wireless LAN 310 and 610 phones are virtually identical to the SpectraLink-Polycom 8020 and 8030 models. To upgrade the Alcatel-Lucent phone's firmware you can download firmware build 131.008 from Polycom web site. Choose the "SpectraLink 8000 Series SIP Software - WTB1xx, WTE1xx (131.008)" link from this location:

http://www.polycom.com/usa/en/support/voice/wi-fi/spectralink_8020_wireless.html

7.3 Upgrade firmware in the Alcatel-Lucent phone

To upgrade firmware in the Alcatel-Lucent IP Touch Wireless LAN Phone 310 or 610 models:

1. Download the new firmware file from the Polycom site.
2. Extract the firmware files package to a TFTP server.
3. Configure the phone IP settings (manually or using DHCP, as described in section 4.2.2) with the address of the TFTP server.
4. Restart the phone. The phone will automatically check the TFTP server for updates.

8. Reference documents

This concludes the procedures for interoperating ProCurve switches with Alcatel-Lucent IP Touch Wireless LAN 310 or 610 phones.

For further information about how to configure ProCurve switches and Alcatel-Lucent products to support mobility, please refer to the following links:

- For user manuals for ProCurve 3500yl-5400zl-8212zl switches:
  http://www.hp.com/rnd/support/manuals/3500-6200-5400-ChapterFiles.htm

- For ProCurve WESM zl manuals:
  http://www.hp.com/rnd/support/manuals/wireless_zl.htm

- For PCM+ and IDM manuals:
  http://www.hp.com/rnd/support/manuals/ProCurve-Manager.htm
  http://www.hp.com/rnd/support/manuals/IDM.htm

- For general information on Alcatel-Lucent wireless phones:
  http://www1.alcatel-lucent.com/products/productsummary.jsp?productNumber=tcm%3A228-1280281635

- For details about how to configure Alcatel-Lucent IP Touch Wireless LAN 310 or 610 phones, refer to these documents about the Polycom-SpectraLink 8020 and 8030 models, available from the Polycom Web site:
  http://www.polycom.com/usa/en/support/voice/wi-fi/spectralink_8020_wireless.html
  http://www.polycom.com/common/documents/support/setup_maintenance/products/voice/SpectraLink_8020_8030_WT_Admin_SIP.pdf

For further information, please visit www.procurve.eu

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